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U. S. DEPARTMENT OF AGRICULTURE--FOREST SERVICE
PACIFIC SOUTHWEST FOREST AND RANGE EXPERIMENT STATION
Division of Forest Insect Research

FOREST INSECT CONDITIONS
CENTRAL SIERRA FOOTHILLS, CALIFORNIA
EL DORADO, AMADOR AND CALAVERAS COUNTIES
SPRING, 1960

During the period April 12-14, 1960, a reconnaissance was made of forest insect conditions in the Sierra foothills, from Highway 50 on the north to the Calaveras Big Trees on the south. Making the survey were Daniel Dotta and Herman Meyer, California Division of Forestry, and Robert E. Stevens from the Experiment Station. They were joined by, or consulted with, Division of Forestry foresters in the different local areas.

As surveys throughout the State have shown, California is currently undergoing a period of unusually heavy losses from pine bark beetles. Increased awareness of the damage beetles are doing has resulted in a sharp step-up in the number of detection reports being received through the cooperative pest detection survey by the Experiment Station. A large proportion of these have originated from the area covered by this report, and it was the aim of this survey to evaluate the infestations detected and the conditions reported to be associated with them. The area covered, along with the specific problem locations discussed, is shown on the attached map.

The Problem

Most of the area surveyed lies below 4,000 feet in elevation. The principal bark beetle damage in this area is tree-killing of ponderosa pine by the western pine beetle and ips beetles (pine engravers).

The area affected is a difficult one with which to deal in order to minimize damage caused by bark beetles. The stands in this general area are scattered, and generally have been logged at least once - oftentimes twice or three times. Much of the land is in the marginal or "fringe" timber zone, where there are many land-use conflicts between growing of trees, grazing, and, more recently, providing for the expanding population. These interests are often not compatible.

Still, much of the land is suitable for growing trees, although some of it is not. It is in this fringe zone generally that the most competition between forest and brushland exists. It is here also that increased bark-beetle activity shows up first and is felt hardest.

Infestations this year can generally be described as serious. There are currently many thousands of infested trees, by and large they are heavily infested, and climatic conditions continue to favor the insects over the trees. The following paragraphs describe several of the examined areas in somewhat more detail.

Cosumnes River Drainage.--In the Pleasant Valley-Grizzly Flats area, T9&10N, R12&13E, losses are unusually heavy. Groups of 20-30 beetle-killed trees are

not uncommon. These trees are of moderate size, 14-26 inches d.b.h. The infestation is a typical ips-western pine beetle combination, the ips beetles having top-killed the trees last summer, and the western pine beetles having filled in from the top down to near ground level. The western pine beetle broods are especially heavy. In this area, as in the following ones, the western pine beetle was in the late larval, pupal, and early adult stages when examined. The adults can be expected to start emerging within 2 weeks.

Sutter Creek-Gopher Gulch.--In this locality a 1959 pine logging operation had been conducted covering some 2 sections. Left behind were the smaller trees and considerable slash, which showed evidence of having produced large numbers of ips. Throughout the area there are groups of 6-12 infested trees. The broods here are less heavy, one tree checked being only lightly infested at 6 feet. Also, there are more abandoned summer-generation 1959 trees in this area than in the preceding one.

A number of digger pines were observed that have died, as previously reported. In view of the large numbers of ips that developed following the logging, this species was undoubtedly primarily responsible for the death of the trees. Digger pine is not attacked by the western pine beetle. Ips will probably play a lesser role in death of digger pine in this particular area in 1960, and losses may decline.

Daffodil Hill-Dew Drop.--Lighter losses prevail here, but two instances of insect damage are worth noting. First, several single ponderosa pines, which showed no signs of predisposing injury, were infested with and had been completely worked over at breast height by flatheaded borers. Presumably, the entire length of the boles were similarly affected. The foliage looked similar to a winter-generation western pine beetle tree, but nowhere along the bole was there any of the woodpecker work that is generally associated with this condition. David German, the Amador County CDF Ranger, indicated that the soil mantle rather lightly covers a lava cap on the ridge where these trees occur, and it may well be that this has a bearing on this unusual (for this area) occurrence.

Farther east from Daffodil Hill, toward Dew Drop, fresh slash was in the process of being attacked by ips; the progeny of the attacking beetles were in the small larval stage. While the upper limbs of the slash had been lopped, the limbs were not scattered, and conditions under the bark will probably be favorable for good brood production. This may result in some top-killing in the residual stand, which is fairly dense.

Forest Creek Burn.--Fire in this area burned about a section of timberland in the summer of 1959. Most of the dead and injured trees were subsequently logged. As could be expected, there was extensive borer damage in the badly burned trees and cull logs left after logging, but no evidence of a bark-beetle buildup was found. The potential for a buildup remains, however, and the burn should be rechecked later this year.

Jackson-Rail Road Flat-Murphys.-- Conditions in this general area are similar to those in the Cosummes drainage, but somewhat less severe.

Calaveras Big Trees.--This area, unlike most of the others in this report, is well within the commercial timber zone. Losses appeared generally to be no greater than normal. An exception was the south-facing slope on the north side of the Stanislaus River, both above and below Boards Crossing. There are probably some 50-60 infested mature ponderosa pines along 1-3 miles of this hillside, in groups of 2-5. There are some scattered single dead ponderosa pines, and a few infested sugar pines. The stand along here is virgin, and has sustained what might be termed "high endemic" loss for many years.

No 1959 Douglas-fir tussock moth defoliation was observed in the Calaveras South Grove area, which was among those included in the 1956 tussock moth spray project. One large sugar pine was identified in the South Grove that was heavily infested by the black pine leaf scale, and as a consequence had very sparse foliage. Otherwise, the tree appeared to be healthy.

Discussion

What are the prospects for continued insect infestations in the central Sierra foothills for the coming year, and what can landowners do if they wish to protect their timber from insect damage?

The answer to the first question seems fairly clear. With the conditions that prevail, i.e., a liberal sprinkling of insects in the woods about to emerge and the unusually dry warm weather to date, continuing high levels of insect populations seem inevitable. Consequently we can expect losses in the fringe zone to continue, and the belt of heavy damage to extend eastward into the better timber. We may also expect somewhat heavier losses in sugar pine, which so far has sustained proportionally less damage than ponderosa pine.

As to what can be done to minimize losses, this depends on the aims of the landowner. Logging of infested and recently killed trees can help to reduce the losses to some extent, however it cannot be expected to do the entire job. From a practical standpoint, the values of direct control in this area are questionable. Landowner participation below 100 percent seriously jeopardizes the prospects of success in cooperative efforts, such as would probably be required here. Without full or nearly full participation, control will not be adequate to prevent continued damage. Treating slash so as to minimize damage from insects should be beneficial in areas where the landowner values the residual stand. Lopping and scattering, or better yet, spraying with lindane will tend to reduce ips populations. Slash treatments alone, however, cannot solve the problem. Western pine beetle infestations present in this area are capable of maintaining themselves for the next year or two, regardless of what is done in handling the slash.

April 20, 1960
Berkeley, Calif.

Robert E. Stevens,
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Attachment

Area Covered in Forest Insect Survey
April 12-14, 1960
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